

## Ozone in Missouri

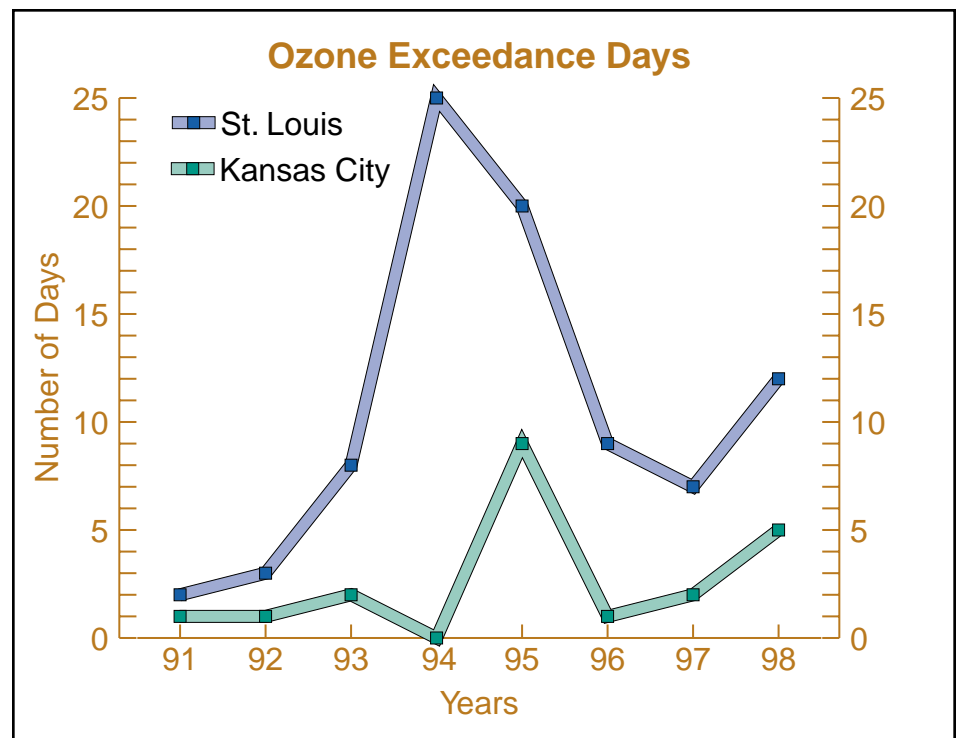
Naturally occurring ozone in the upper atmosphere protects the earth from the sun's harmful rays. But ground-level ozone is an irritant that damages lung tissue and aggravates respiratory disease. The pollutant is formed when heat and sunlight mix with volatile organic compounds (VOC) and nitrogen emissions in the lower atmosphere. People show various respiratory symptoms upon exposure to ozone. Healthy young adults may experience respiratory problems at ozone levels as low as .08 parts-per-million (ppm). Persons most susceptible to ozone include children, the elderly, persons with pre-existing respiratory problems and persons exercising outdoors.

### NUMBER OF OZONE SITE EXCEEDANCES REPORTED

Approximately four million of Missouri's five million residents live

in St. Louis and Kansas City where the likelihood of ozone formation is greatest. The National Ambient Air Quality Standard of .12 ppm is typically exceeded on hot, sunny summer days. The number of days the standard is exceeded in a given year generally reflects both weather conditions and the chemicals in the area's air.

One monitoring site in the St. Louis nonattainment area violated the one-hour standard at the end of 1998. Kansas City reported no violations of the one-hour standard. Eight St. Louis sites violated the eight-hour standard for the three-year period of 1996 through 1998. Three Kansas City sites violated the eight-hour standard. Determination of compliance with the new eight-hour ozone standard will be based on the period of 1997 through 1999.

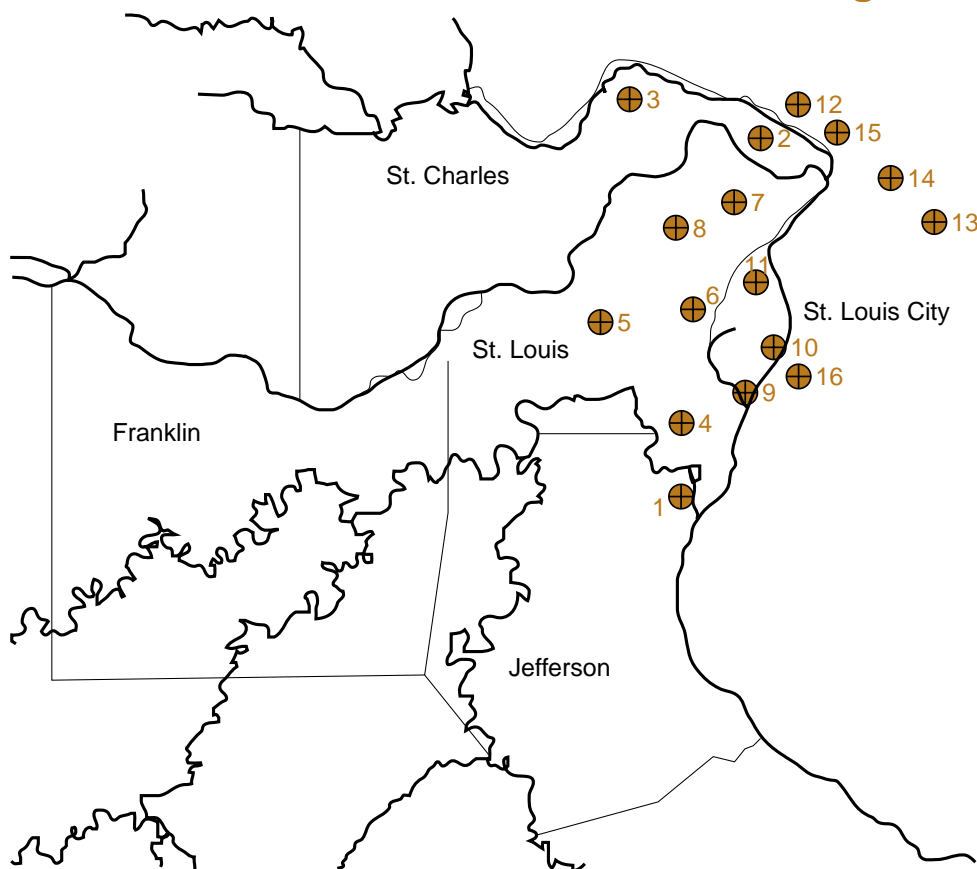


## OZONE IN ST. LOUIS

Under the Clean Air Act, EPA has designated many areas in the country as nonattainment for at least one criteria pollutant. Areas in noncompliance with the ozone standard are classified marginal, moderate, serious, severe or extreme in their levels of nonattainment. The St. Louis ozone nonattainment area is one of 23 areas nationwide currently classified as a “moderate” nonattainment area.

The St. Louis moderate nonattainment area includes the city of St. Louis and the counties of St. Charles, St. Louis, Jefferson and Franklin. The Illinois side includes Madison, Monroe and St. Clair counties. The map below shows the sites for air monitors in the nonattainment area.

### St. Louis Ozone Nonattainment Area Monitoring Sites



#### Site Number Site Name

|    |                                      |
|----|--------------------------------------|
|    | <b>Missouri</b>                      |
| 01 | Arnold Tenbrook, Arnold              |
| 02 | West Alton                           |
| 03 | Orchard Farm                         |
| 04 | 4580 S. Lindberghand Gravois, Affton |
| 05 | 305 Weidman Rd., Queeny Park         |
| 06 | 55 Hunter Ave., Clayton              |
| 07 | 3400 Pershall Rd., Ferguson          |
| 08 | 10267 St. Charles, St. Ann           |
| 09 | 8227 S. Broadway, St. Louis          |
| 10 | 1122 Clark, St. Louis                |
| 11 | Newstead and Cote Brillante          |

#### Site Number Site Name

|    |                              |
|----|------------------------------|
|    | <b>Illinois</b>              |
| 12 | 409 Main St., Alton          |
| 13 | 200 W. Division, Maryville   |
| 14 | Poag Road, Edwardsville      |
| 15 | 54 N. Walcott, Wood River    |
| 16 | 13th and Tudor, E. St. Louis |

## NUMBER OF DAYS WITH EXCESSIVE OZONE

St. Louis exceeded the ozone standard each summer in 1996, 1997 and 1998. The number of days with ozone exceedances is in the monitoring data for Missouri and Illinois below. The St. Louis ozone

nonattainment area reported 12 exceedances of the one-hour standard during the 1998 ozone season (April 1 through October 31). Eleven of the exceedances occurred in Missouri. One exceedance occurred in Illinois, at the East St. Louis site.

## Number of Days with Excessive Ozone - St. Louis Ozone Nonattainment Area

| <i>Monitoring Site</i>                  | <i>1995</i>      | <i>1996</i>     | <i>1997</i>     | <i>1998</i>      |
|---|------------------|-----------------|-----------------|------------------|
| <b><i>Missouri</i></b>                  |                  |                 |                 |                  |
| Arnold Tenbrook, Arnold                 | 2                | 1               | 1               | 1                |
| General Electric, West Alton            | 4                | 1               | 1               | 2                |
| 2165 Hwy V, Orchard Farm                | 2                | 1               | 0               | 1                |
| 4580 S. Lindberg and Gravois, Affton    | 0                | 1               | 1               | 1                |
| 305 Weidman Rd., Queeny Park            | 1                | 0               | 0               | 1                |
| 55 Hunter Ave., Clayton                 | 0                | 0               | 0               | 1                |
| 3400 Pershall Rd., Ferguson             | 1                | 0               | 1               | 1                |
| 10267 St. Charles Rock Road, St. Ann    | 1                | 0               | 0               | 1                |
| 8227 S. Broadway, St. Louis             | 0                | 1               | 0               | 1                |
| 1122 Clark and Tucker, St. Louis        | 0                | 0               | 0               | 1                |
| Newstead and Cote Brilliante, St. Louis | 1                | 0               | 0               | 0                |
| <b><i>Illinois</i></b>                  |                  |                 |                 |                  |
| 409 Main St., Alton                     | 1                | 2               | 0               | 0                |
| 200 W. Division, Maryville              | 1                | 0               | 0               | 0                |
| Poag Road, Edwardsville                 | 3                | 0               | 1               | 0                |
| 54 N. Walcott, Wood River               | 2                | 1               | 1               | 0                |
| 13th and Tudor, East St. Louis          | 1                | 0               | 0               | 1                |
| <b><i>Total</i></b>                     | <b><i>20</i></b> | <b><i>8</i></b> | <b><i>6</i></b> | <b><i>12</i></b> |

## CONTROLLING ST. LOUIS OZONE

**M**issouri's State Implementation Plan (SIP) for St. Louis includes control measures and schedules for compliance with the Clean Air Act in order to attain the ozone standard. To reduce ambient ozone concentrations to safe levels, the state must control industrial and mobile sources of volatile organic compounds (VOCs). Major control measures in St. Louis include a vehicle emissions inspection and maintenance program, Stage II vapor recovery systems for gasoline refueling, emission control systems for existing and new industrial sources and some contingency measures in case the mandatory controls fail to attain the standard. Two control strategies leading to the greatest reductions in volatile organic compound emissions are enhanced vehicle inspection and maintenance and the use of reformulated gasoline.

### VEHICLE EMISSIONS INSPECTIONS

The program for vehicle emissions testing and repair, or Inspection and Maintenance (I/M), is a key mechanism for control of mobile source emissions in the St. Louis area. This program makes up over 40 percent of DNR's state implementation plan to bring St. Louis into compliance with the National Ambient Air Quality Standards (NAAQS) for ozone, or urban smog.

Currently, vehicles are tested with a basic emissions testing program as

part of the annual safety inspection conducted at local car service facilities every year. The plan for enhanced I/M includes a more accurate test every two years. The new technology measures specific pollutants from vehicles more precisely than the current system. The enhanced tests will be performed in testing stations that do not offer repair services.

Legislation for the enhanced program was passed by the legislature in 1994, but funding for the program was removed in 1995. In 1996 DNR convened an advisory committee to seek consensus on emissions testing among all interested parties.

DNR drafted a Request for Proposal (RFP) to implement a new enhanced I/M program in the St. Louis nonattainment area. This RFP was released in late 1998, for contractors to bid on building and operating testing stations. The contract calls for enhanced vehicle emissions testing to begin in April 2000.

### LOW REID VAPOR PRESSURE GASOLINE AND REFORMULATED GASOLINE

Many VOC control measures have been used in the effort to reach attainment of the ozone standard. In 1994, low vapor pressure gasoline was implemented in St. Louis. Reid vapor pressure (RVP) is a measure of the volatility of gasoline or its tendency to evaporate into the air. Lowering RVP reduces evaporative emissions of gasoline. Since 1994, a state regulation has restricted the RVP of gasoline sold in the St. Louis nonattainment from June 1 through September 15.

In July 1998, Gov. Carnahan submitted a letter requesting that the U.S. Environmental Protection Agency (EPA) require federal Reformulated Gasoline (RFG) for the Missouri portion of the St. Louis nonattainment area beginning June 1, 1999. RFG is a special gasoline formula designed to burn cleaner than conventional gasoline, and to reduce both exhaust and evaporative emissions. RFG is administered and enforced by the EPA.

### AREA RECLASSIFICATION ("BUMP-UP")

Moderate nonattainment areas were required to meet the National Ambient Air Quality Standard for ozone by Nov. 15, 1996. Because St. Louis failed to meet this goal, the area may be reclassified by EPA, or "bumped-up" in its nonattainment status from moderate to serious. In 1998, the EPA did not take any action to bump-up the area, but did propose a policy that may allow St. Louis to obtain an attainment date extension. DNR committed to meet the requirements of EPA's policy. DNR must demonstrate that St. Louis is impacted by transported air pollution from upwind areas. Also, all required local control measures must be implemented in St. Louis. An obstacle to the attainment date extension is a lawsuit filed in July 1998 by environmental groups against the EPA for failure to bump-up the St. Louis area. Should this bump-up occur, St. Louis would be obligated to meet the more stringent requirements of the Clean Air Act Amendments of 1990 for serious nonattainment areas.



## OZONE IN KANSAS CITY

The Kansas City Ozone Maintenance Area includes Clay, Jackson and Platte counties in Missouri as well as Johnson and Wyandotte counties in Kansas. The Kansas City area was designated as a sub-marginal nonattainment area under the Clean Air Act Amendments of 1990. In 1992, the Kansas City area demonstrated attainment of the standard and was redesignated to attainment.

During the three-year period of 1995 through 1997, the Kansas City Maintenance Area experienced a violation of the ozone standard. The Kansas City Maintenance Area reported no violations of the ozone standard during the three-year period of 1996 through 1998. The table below lists the ozone exceedances experienced in the Kansas City Maintenance Area from 1995 through 1998. The Kansas City area reported four exceedances of the one-hour standard during the 1998 ozone season. Three of the exceedances occurred in Missouri. One exceedance occurred in Kansas.

### Number of Days with Excessive Ozone - Kansas City Ozone Maintenance Area

| <i>Monitoring Site</i>                      | <i>1995</i>     | <i>1996</i>     | <i>1997</i>     | <i>1998</i>     |
|---|-----------------|-----------------|-----------------|-----------------|
| <b><i>Missouri</i></b>                      |                 |                 |                 |                 |
| Watkins Mill State Park Road,<br>Lawson     | 3               | 0               | 0               | 1               |
| Hwy. 33 and County Hwy,<br>Liberty          | 3               | 0               | 1               | 2               |
| 49th and Winchester WOF,<br>Kansas City     | 2               | 0               | 0               | 0               |
| Richards-Gebaur AFB,<br>Kansas City         | 0               | 0               | 0               | 0               |
| 11500 N. 71 Hwy. KCI Airport<br>Kansas City | 1               | 0               | 1               | 1               |
| <b><i>Kansas</i></b>                        |                 |                 |                 |                 |
| Anne Avenue,<br>Wyandotte County            | 0               | 1               | 0               | 1               |
| <b><i>Total</i></b>                         | <b><i>9</i></b> | <b><i>1</i></b> | <b><i>2</i></b> | <b><i>5</i></b> |

## CONTROLLING KANSAS CITY OZONE

**D**NR's Air Pollution Control Program developed an ozone control strategy after working with the Mid-America Regional Council (MARC), the Kansas Department of Health and Environment, Kansas City local agencies and industrial representatives. This strategy is to be implemented in place of the contingency measures presented in the 1992 Kansas City Ozone Maintenance State Implementation Plan. DNR presented this plan to the Missouri Air Conservation Commission in April 1997. The commission requested DNR to remove inspection and maintenance from this plan and replace it with a more expeditious control program. After discussions with MARC and

other community representatives, a control strategy including Reformulated Gasoline (RFG) was developed. The Missouri Air Conservation Commission adopted the Maintenance Plan in February 1998. This plan requires that DNR recommend that the governor request the EPA to include the Kansas City area into the federal RFG program by April, 2000.

### LOW REID VAPOR PRESSURE GASOLINE AND REFORMULATED GASOLINE

The Kansas City area has experienced ozone problems since the late 1970s. Reid vapor pressure is a measure of the tendency of gasoline to evaporate into the air. Lowering gasoline's RVP reduces its evaporative emissions. From 1990 through 1997, the RVP of gasoline in Kansas City has been reduced on three occasions. The latest change occurred during the summer of 1997. The Missouri

Department of Natural Resources and Kansas Department of Health and Environment both required that 7.2 Reid Vapor Pressure gasoline be sold in the Kansas City Maintenance Area during the peak ozone season.

The revised maintenance plan calls for reformulated gasoline to be sold in the Kansas City area starting in 2000. RFG would replace low Reid vapor pressure gasoline as the fuel control strategy. DNR plans to assist the Kansas Department of Health and Environment in hosting a fuel summit in the Kansas City area in 1999. This meeting will be similar to the 1998 fuel summit held in St. Louis, and will bring state and local government regulators together with industry, environmental groups and other interested parties to discuss fuel control strategies to improve Kansas City air quality.

